forward more than once that it might be reasonable to regard land as being owned by no one, but that everyone should pay a rent to the community, based on an independent assessment of the value of the land. This has certain attractions; but how does one decide, for example, to whom the land should be let if several people wish to rent it? And who would be responsible for putting in new drainage systems if no one owned the land?

It is implicit throughout this book that 'there is every reason to believe that a farming system based on small, highly labour-intensive units can be very productive indeed'; but modern Man does not live by bread alone, unless forced to do so. He also uses timber, metals, and various artefacts—so much so that the effort required to feed himself and his family is often as little as 15–20% of his total effort. It is probably true that some move towards resettlement of rural areas is needed in a country such as Britain, where very few people are directly employed in agriculture; but the economics of such a change require more thorough and detailed exploration than this reviewer has yet seen. Perhaps, if sufficient people read this book, someone may be stirred, by the over-abundance of rhetoric and paucity of detailed explication, to look more carefully at a range of options and produce a more convincing argument for change.

The concept of largely self-sufficient dwellings surrounded by vegetable and fruit gardens, and clustered into loosely-knit irregularly-shaped villages surrounded by agricultural areas and forest, is plausible and attractive —yet it runs completely contrary to recent and current economic and physical planning policies in Western Europe. It may, however, be time for a change in these policies.

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Energy and Food Production, by Gerald Leach. International Institute for Environment and Development, 27 Mortimer Street, London W1, England, and 1525 New Hampshire Avenue N.W., Washington, D.C. 20036: ii + 151 pp., figs and tables, 29.5 × 20.7 × 0.9 cm, stiff paper covers, £1.00 or US $2.50, 1976.

Who would guess that about 0.8 tonnes of oil equivalent per annum is required to feed each person in the United Kingdom and the United States, and that this is something like three times the average total *per caput* fuel-use for all purposes in the developing world? Such remarkable statements make *Energy and Food Production* a challenging and very clear book. As a basis for his analysis, the Author uses a simple (possibly too simple?) instrument, the energy ratio, obtained by dividing the edible energy output by the energy input, which provides a kind of energy-efficiency ratio for a given food-production system.

The energy budget of 85 food-production systems is examined, ranging from the balanced diet of the !King Bushmen living in the Kalahari Desert to the culture in glasshouses of winter lettuce under the British climate. Data clearly show that pre-industrial crops have an energy ratio higher than 10, while industrial crop production ranges between 1 and 10 and industrial animal production between 0.1 and 1: the poultry industry, for example, consumes 10 times more energy than it produces as edible energy, and fisheries consume between 20 and 250 times more.

However, an analysis that is concentrated uniquely on energy ratios would clearly be inadequate. The Kalahari Bushmen, for example, spend 23% of their time in food collection: their food-energy output per man-hour of labour is around 4.5 megajoules, which incidentally is a figure suprisingly similar to that of United Kingdom allotment gardens. Obviously the industrialization of crop production boosts the figures to very high levels that range up to around 3,000 megajoules per man-hour of labour—a clear demonstration of the labour-savings of industrialization but an expensive trend in terms of energy, as industrialized crop agriculture shows an energy ratio remaining in the range of 1 to 3.

The Author also carries out interesting comparisons of the land areas required for food production: the !King Bushman needs some 10.4 square kilometres of desert to get his food, while the average United Kingdom garden (0.025 ha) provides about one-third of the edible energy needs and all protein needs of the average Briton, based on an all-vegetable diet. Thanks to the industrialization of agriculture and the use of artificial fertilizers, one hectare of crops has today a sufficient output to support some 10–20 people on all-vegetable diets; but again the energy inputs are very high, giving quite a low final energy ratio.

One of the conclusions to which the Author is led is that the exceptional meat-eating habits of the West are no less than a 'food, land, and energy, disaster-area in global terms'. While agreeing on the principles of such a very strong statement and the dramatic character of the present food situation, one may ask if it would be feasible to reverse the meat-eating trend of affluent societies? Actually, I do not believe that this reflects a habit but rather some deep-rooted physiological and behavioural requirements resulting from the fact that, during at least 95% of his evolution, primitive Man was a hunter, thus having a meat-based diet. Such trends are not easily wiped out, and when it becomes possible for them to take over, they very rapidly do so—as was the case in Libya, where in eleven years (1959–1970) the *per caput* meat consumption increased threefold owing to oil-based affluence.

According to the Author, the urgency of initiating Western-style agricultural development at the world level is obvious if one wishes to alleviate the heavy load of chronic malnutrition. Yet he asks how far such purely technical developments should go—especially without guarantees of adequate fuels and power to support them in the future. This is indeed a dramatic question which he does not attempt to answer. But his point is well taken: this kind of interrogation is very important, and deserves urgent attention, as it has multiple implications for the whole of humanity.

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Sociobiology, by Edward O. Wilson. Harvard University Press, Cambridge, Massachusetts, and London, England: ix + 697 pp., figs and tables, 25.5 × 25.5 × 4.5 cm, £13.60, 1975.

The subtitle of this work is 'The New Synthesis', and the objective is to show how sociobiology (defined as the systematic study of the biological basis of all social behaviour) comprises both invertebrate and vertebrate zoology, together with population biology. Neurophysiology and evolution must also play a part in this. The fact that Man is one of the animals involved, is presumably why it has been claimed from some quarters that such purely scientific work shows political bias.

This book comprises a massive effort, and is therefore not easy to read and digest properly. It requires concentration in the reader, and cannot simply be relegated to a few leisure moments or even hours. There are many references